

TECHNICAL MANUAL
Of
Intel Q87 Express Chipset
Based
M/B for LGA 1150 Quad Core Ready
Intel Core Processor

NMF94RM

Rev: 1.0

Release date: March 23, 2015

Trademark:

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Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.
- 0 to 40 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)
- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the 'welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.
- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.
- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



USER'S NOTICE

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Manual Revision Information

Reversion	Revision History	Date
1.0	First Edition	March 23, 2015

Item Checklist

- Motherboard
- User's manual
- DVD for motherboard utilities
- Cable(s)
- I/O back panel shield

Chapter 1

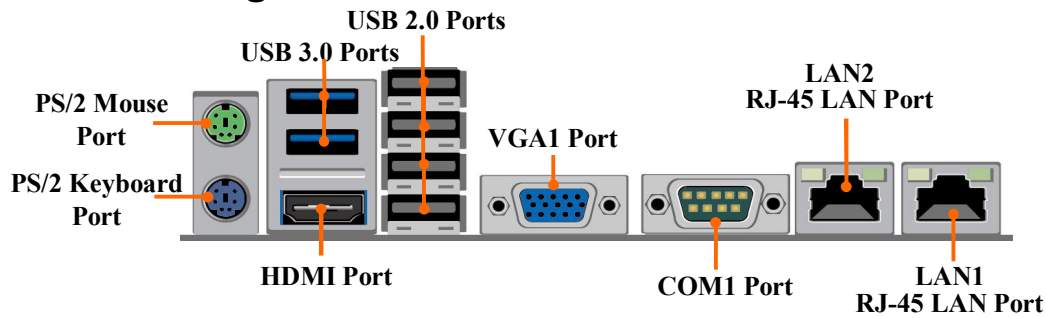
Introduction of the Motherboard

1-1 Specification

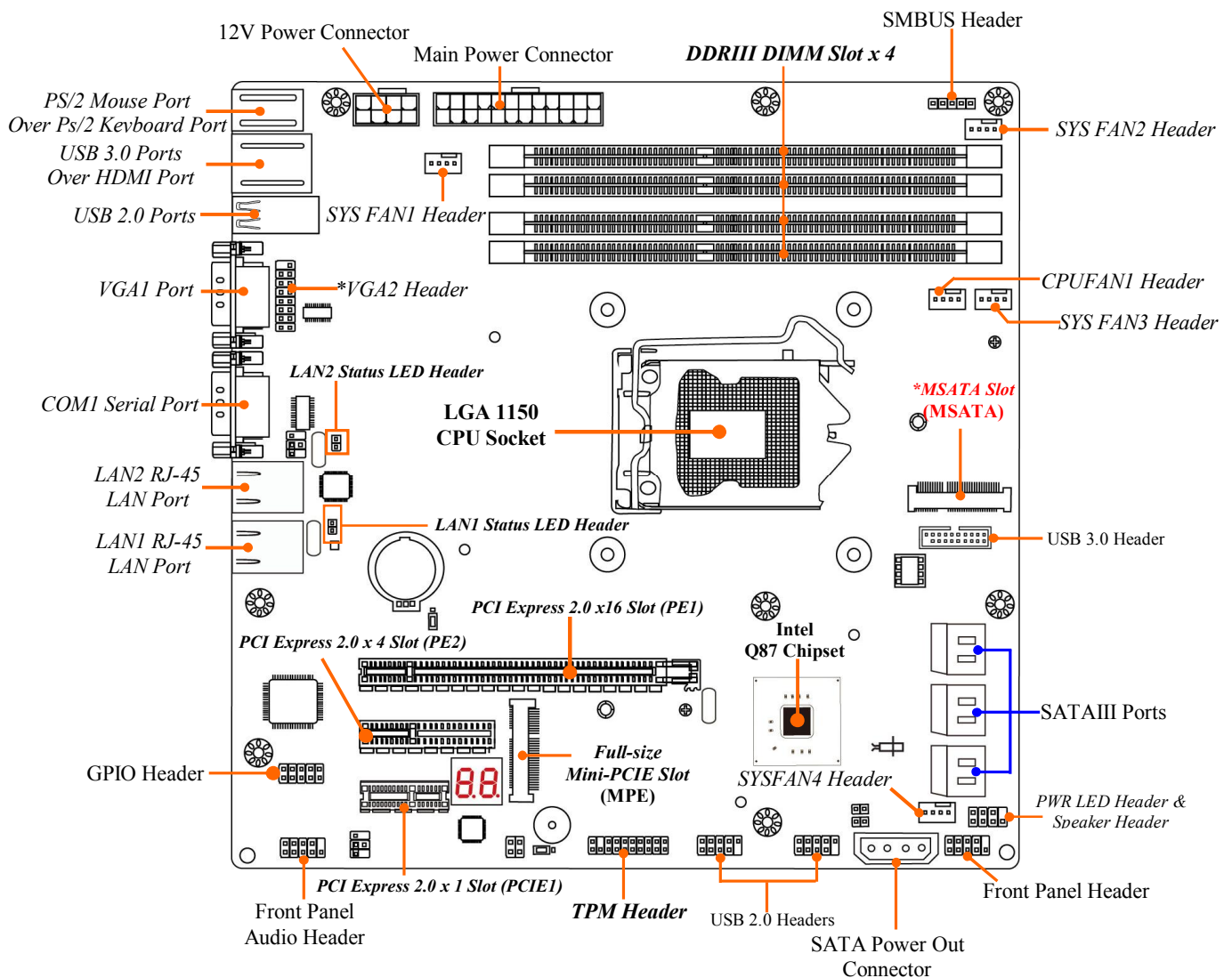
Spec	Description
Design	<ul style="list-style-type: none"> ● Micro-ATX form factor; PCB size: 24.4 x24.4 cm
Chipset	<ul style="list-style-type: none"> ● Intel® Q87 Express Chipset
CPU Socket	<ul style="list-style-type: none"> ● Supports Intel® 4th Gen. Core™ i7, Core™ i5, Core™ i3 series, Pentium® processor in LAG1150 Package * for detailed CPU support information please visit our website
Memory Slot	<ul style="list-style-type: none"> ● 4* DDRIII RAM module slot ● Supporting four DDRIII 1600/1333MHz SDRAM Module expandable to 32 GB (Maximum) ● Support dual-channel function
Expansion Slot	<ul style="list-style-type: none"> ● 1 * PCI-Express x16 slot (PE1) ● 1 * PCI-Express x4 slot (PE2) ● 1 * PCI-Express x1 slot (PCIE1) ● 1 * Full-size Mini-PCIE slot (MPE)
Storage	<ul style="list-style-type: none"> ● 6 * SATAIII 6Gb/s ports support RAID 0, 1, 5, 10 function ● 1* MSATA connector, share with SATA6 port
LAN Chip	<ul style="list-style-type: none"> ● Integrated with Intel I211AT Gigabit PCI-E LAN chip & Intel I217LM Gigabit LAN PHY chip ● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate
BIOS	<ul style="list-style-type: none"> ● 64M Bit DIP Flash ROM
Multi I/O	<p>Rear Panel I/O:</p> <ul style="list-style-type: none"> ● 1* PS/2 keyboard port connector ● 1* PS/2 mouse port connector ● 1* HDMI port connector ● 2* USB 3.0 port connector ● 4* USB 2.0 port connector ● 1*VGA port connector ● 1*Serial port connector (*COM1 supports RS422/RS485 function) ● 2*RJ-45 LAN connector <p>Internal I/O Connectors& Headers:</p> <ul style="list-style-type: none"> ● 1 *24-pin main power connector ● 1 *8-pin 12V power connector ● 1* 4-pin SATA power out connector ● 1* Front panel header ● 1* Speaker header+ 1* POWER LED header ● 2* front panel USB 2.0 header (support 4* expansion USB 2.0 ports) ● 1* front panel USB 3.0 header (support 2* expansion USB 3.0 ports) ● 1* TPM 1.2 header ● 1* COM port header ● 1* GPIO header ● 2* LAN Status indicator header ● 1* VGA Port header (VGA2, shares with rear panel VGA port) ● 1* SM_BUS header ● 1* CPUFAN header ● 4* SYSFAN header

1-2 Layout Diagram

Rear IO Diagram

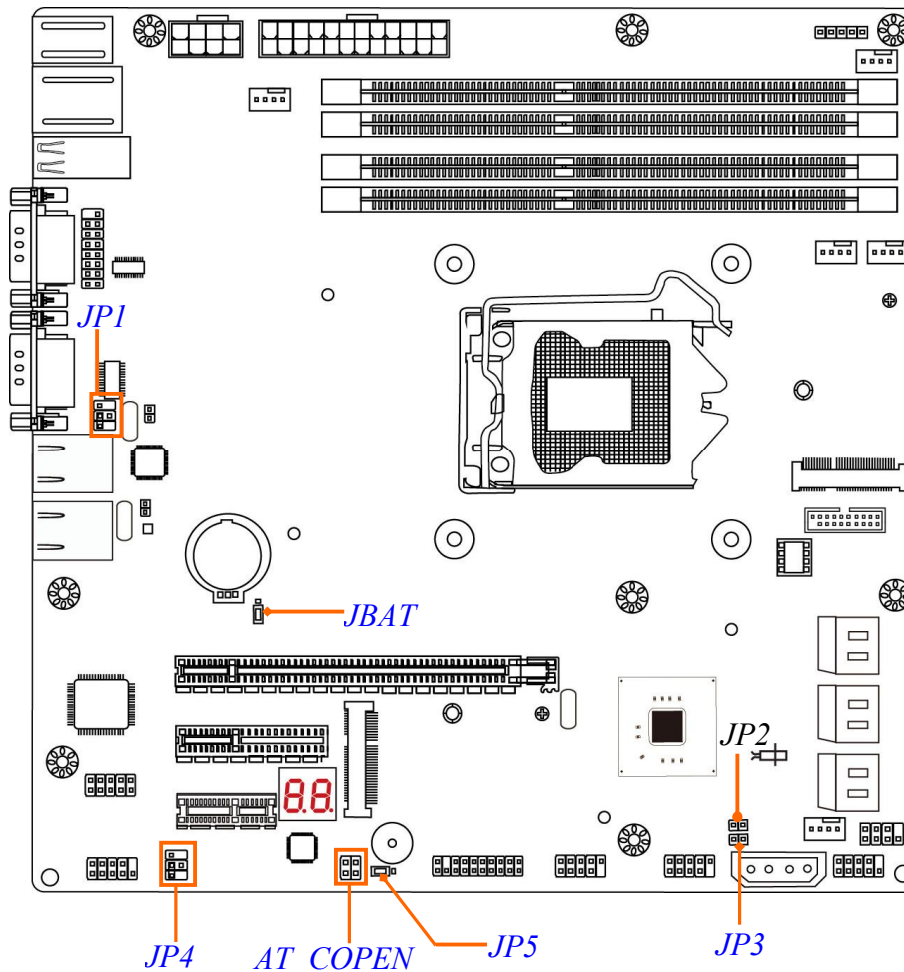


Motherboard Internal Diagram



***Note:** VGA2 header shares with VGA1 port; MSATA slot shares with SATA6 port; i.e. only one of them can work at a time.

Motherboard Jumper Position



Jumper

Jumper	Name	Description
JBAT	CMOS RAM Clear Function Setting	3-pin Block
JP1	COM1 Port Pin9 Function Select	4-pin Block
JP4	COM2 Header Pin9 Function Select	4-pin Block
JP5	Mini-PCIE Slot (MPE) Power VCC3.3V/3.3VSB Select	3-pin Block
JP3	ME_Feature Measure Function Select	2-pin Block
JP2	For Factory Test	2-pin Block
AT_COPEN	Pin 1-2: ATX Mode & AT Mode Select Pin 3-4: Case Open Message Display Function	4-pin Block

Connectors

Connector	Name
ATXPWR	ATX Power Connector
ATX12V1	ATX 12V Power Connector
SATA_PWR	SATA Power Out Connector
SATA1/2/3/4/5/6	SATAIII Connector x6
KBMS(Top)	PS/2 Mouse Port Connector
KBMS(Bottom)	PS/2 Keyboard Port Connector
HDMI	HDMI Port Connector
USB30	USB 3.0 Connector X2
USB20	USB 2.0 Connector X4
VGA1	VGA Port Connector
COM1	Serial Port Connector
LAN1/LAN2	RJ-45 LAN Connector X2

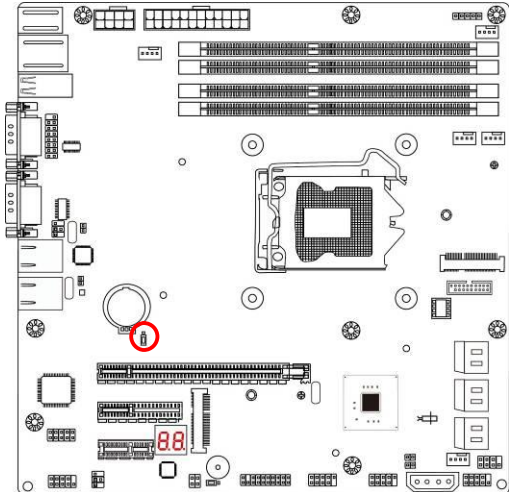
Headers

Header	Name	Description
JW_FP1	Front Panel Header: PWR LED/ HDD LED /Power Button /Reset	9-pin Block
SPK-LED	Speaker Header & Power LED Header	7-pin Block
FP_USB1/ FP_USB2	USB 2.0 Header	9-pin Block
TPM1	TPM 1.2 Header	19-pin Block
COM2	Serial Port Header	9-pin Block
GPIO1	GPIO Header	10-pin Block
LAN1_LED1/ LAN2_LED2	LAN Status LED Header	2-pin Block
VGA2	VGA Port Connector	15-pin Block
FP_USB30	USB 3.0 Header	19-pin Block
SMBUS1	SMBUS Header	4-pin Block
CPUFAN1	CPUFAN Header	4-pin Block
SYSFAN1/2/3/4	SYSFAN Header	4-pin Block

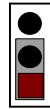
Chapter 2 Hardware Installation

2-1 Jumper Setting

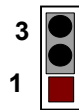
JBAT (3-pin): Clear CMOS Function Settings



JBAT

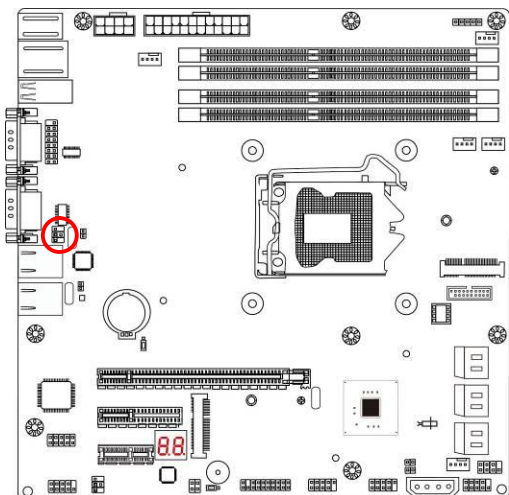


1-2 Closed: Normal;

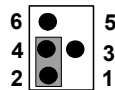


2-3 Closed: Clear CMOS.

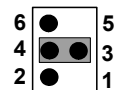
JP1 (4-pin): COM1 Port Pin9 Function Select



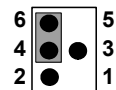
JP1 → COM1 Port



2-4 Closed:
RI=RS232;

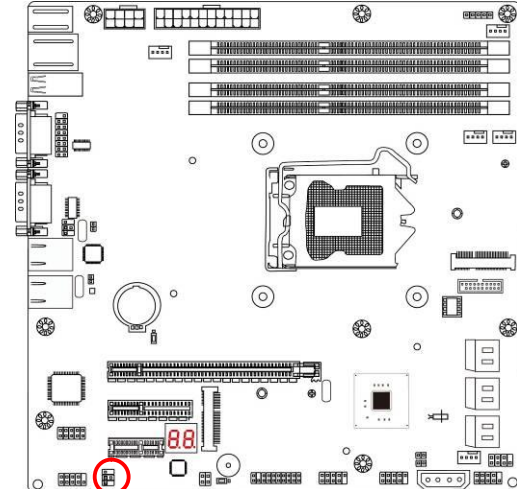


3-4 Closed:
RI= +5V;

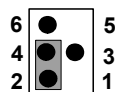


4-6 Closed:
RI= +12V.

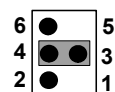
JP4 (4-pin): COM2 Header Pin9 Function Select



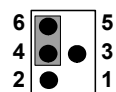
JP4 → COM2 Port



2-4 Closed:
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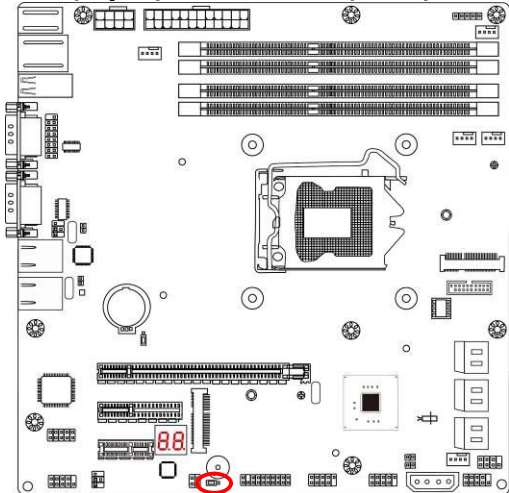


3-4 Closed:
RI= +5V;

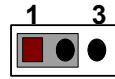


4-6 Closed:
RI= +12V.

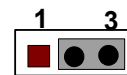
JP5 (3-pin): Mini-PCIE (MPE) Slot VCC 3.3V/3.3VSB Select



JP5→Mini-PCIE (MPE) Slot

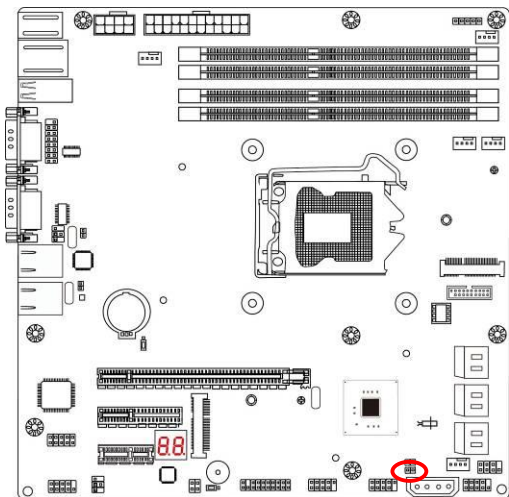


1-2 Closed : MPE Slot VCC= 3.3V;



2-3 Closed : MPE Slot VCC= 3.3VSB.

JP3 (2-pin): ME Security Measure Function Select



JP3

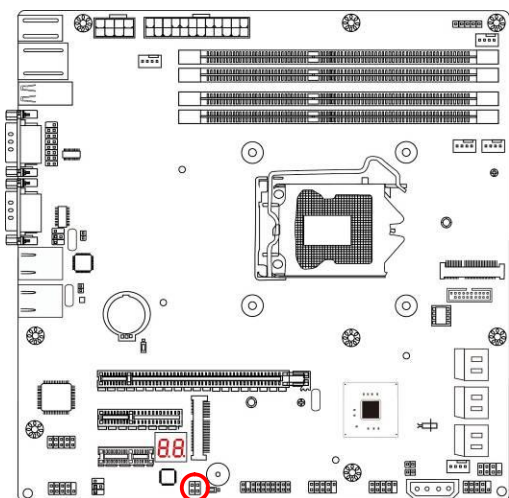


1-2 Open:Enable Security Measures in the Flash Descriptor(Default) ;

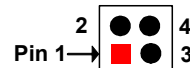


1-2 Closed:Disable Security Measures in the Flash Descriptor(Override).

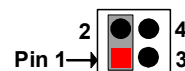
Pin 1 & 2 of AT_COPEN (4-pin): AT Mode Select



AT_COPEN(Pin 1&2) →AT Mode Select



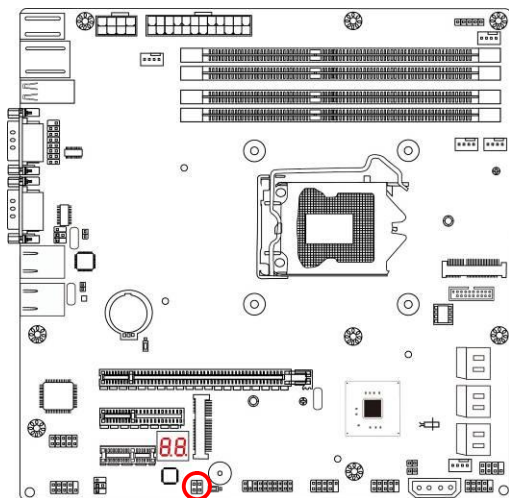
1-2 Open: ATX Mode Selected;



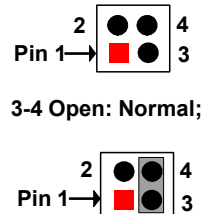
1-2 Close: AT Mode Selected.

***ATX Mode Selected: Press power button to power on after power input ready;
AT Mode Selected: Directly power on as power input ready.**

Pin 3 & 4 of AT_COPEN (4-pin): Case Open Message Display Function Select



AT_COPEN (Pin 3&4) → Case Open Function Select



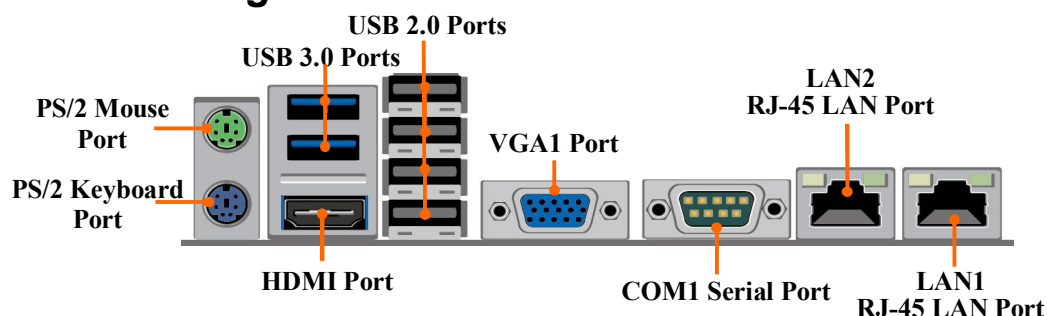
3-4 Close: Case Open Function Selected (One Touch).

Pin 3-4 Close: When Case open function pin short to GND, the Case open function was detected. When Used, needs to enter BIOS and enable 'Case Open Detect' function. In this case if your case is removed, next time when you restart your computer, a message will be displayed on screen to inform you of this.

2-2 Connectors and Headers

2-2-1 Rear I/O Back Panel Connectors

Rear IO Diagram



(1) KB/MS: PS/2 Keyboard & Mouse Connectors

The connectors are for PS/2 keyboard and PS/2 Mouse. The green one is PS/2 mouse port and the purple one is PS/2 keyboard port.

(2) USB30: USB 3.0 Port Connector

These USB 3.0 connectors are for user to connect USB 3.0 compatible devices to the system board.

(3) HDMI: High-Definition Multimedia Interface

This point-to-point interface is for audio and video signals designed as a single-cable solution for home theater and consumer electronics equipment.

(4) USB20: USB 2.0 Ports

The connectors are USB 2.0 connectors to connect USB devices to the system board.

(5) VGA1: D-Sub 15-pin VGA Connector

VGA connector is the 15-pin D-subminiature female connector; it is for the display devices, such as the CRT monitor, LCD monitor and so on.

(6) COM1: Serial port Connector

This serial port is for user to connect compatible mouse, modern or other peripherals.

(7) LAN1/LAN2: RJ-45 LAN Port Connectors

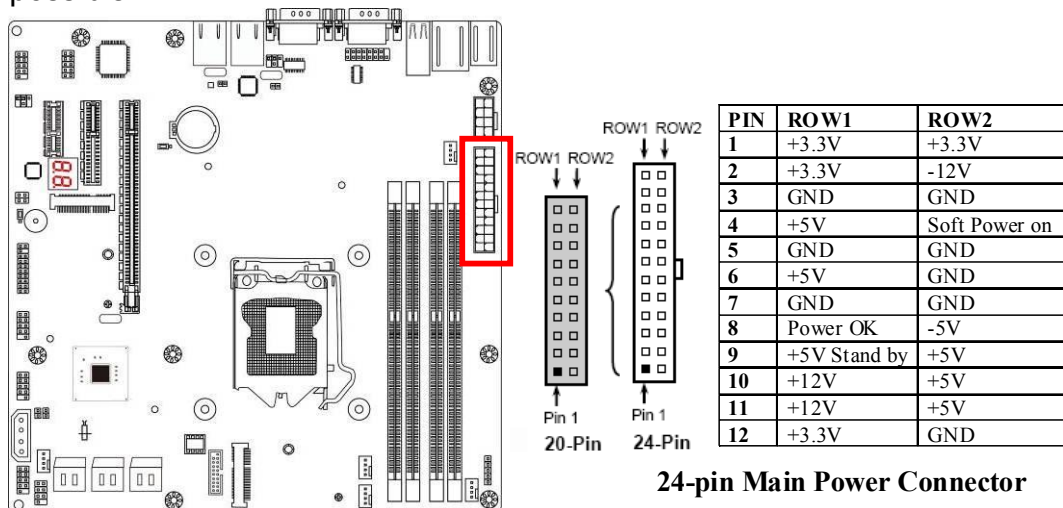
The connectors are standard RJ-45 connectors for Network.

2-2-2 Motherboard Internal Connectors

(1) ATXPWR (24-pin block): Main Power Connector

ATX Power Supply connector: This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows using soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.

- ** We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has 24-pin and 4-pin power plugs.
- ** If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.
- ** If you are using a 20-pin power plug, please refer to Figure1 for power supply connection. Power plug form power supply and power connectors from motherboard both adopt key design to avoid mistake installation. You can insert the power plug into the connector with ease only in the right direction. If the direction is wrong it is hard to fit in and if you make the connection by force it is possible.



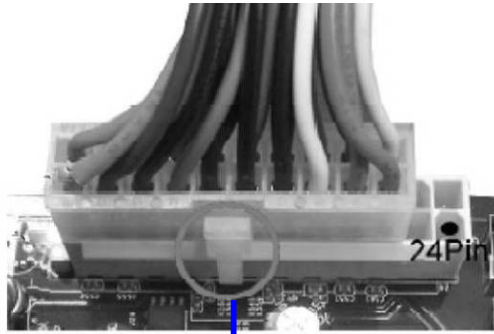


Figure 1: 20-pin power plug

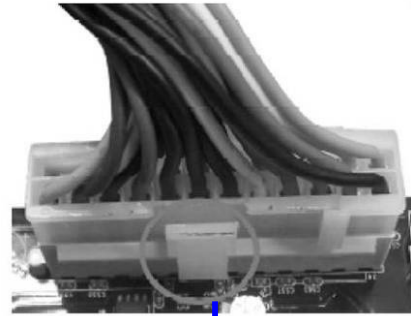
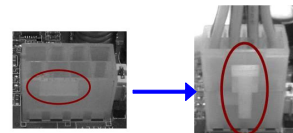
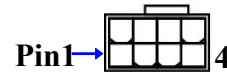
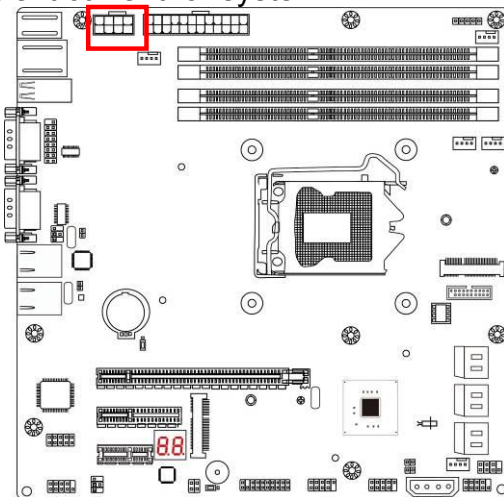


Figure 2: 24-pin power plug

(2) ATX12V1 (4-pin block): 12V Power Connector

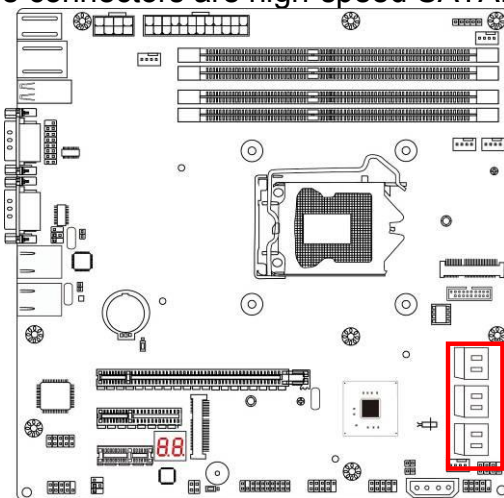
This is a new defined connector that usually comes with ATX Power Supply that supports extra 12V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.



Pin	Definition	No.	Definition
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

(3) SATA1/2/3/4/5/6(7-pin block): SATAIII Port connector

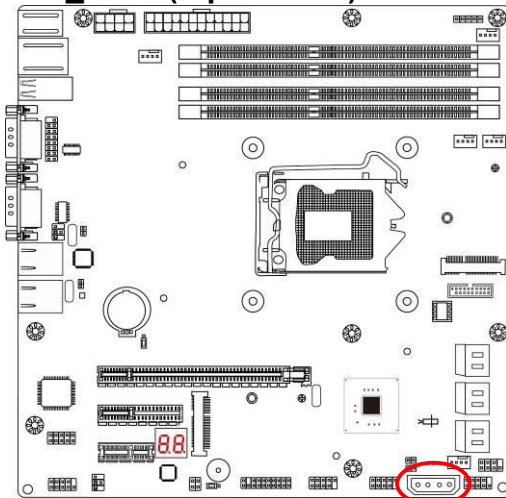
These connectors are high-speed SATAIII ports that support 6 GB/s transfer rate.



Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

***Note:** SATA6 port shares with MSATA slot, i.e., only one of them can work at a time at user's choice.

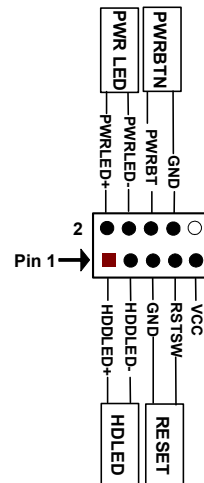
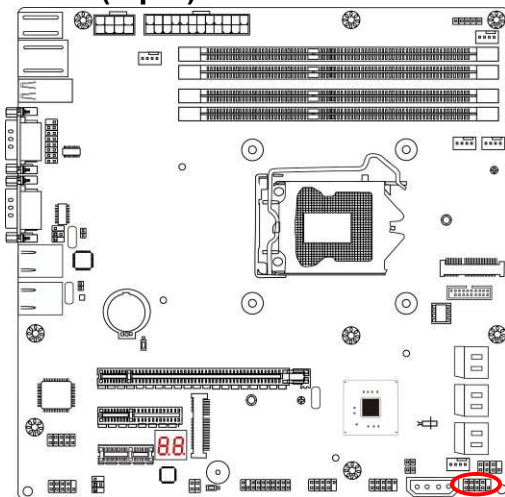
(4) SATA_PWR (4-pin block):: SATA Power Out Connector



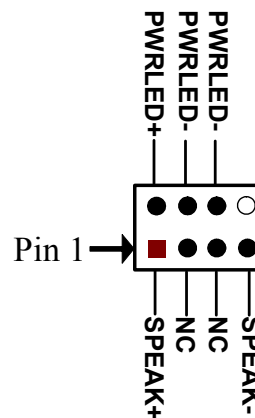
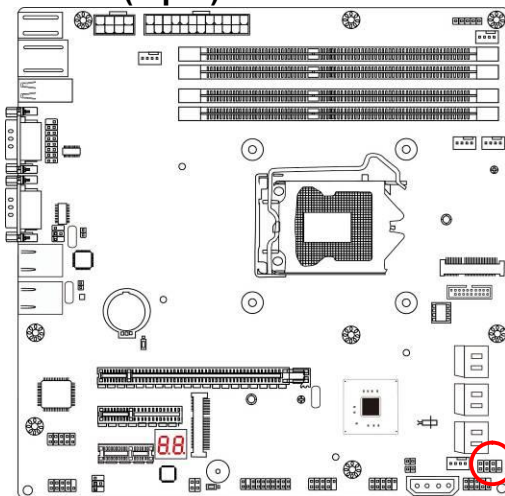
Pin No.	Definition
1	+12V
2	GND
3	GND
4	VCC

2-2-3 Header Pin Definition

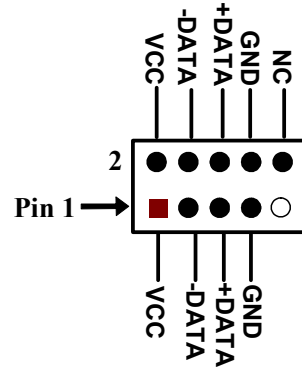
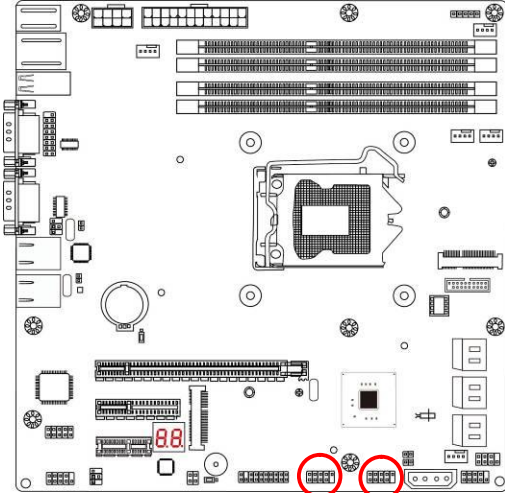
(1) JW-FP1 (9-pin): Front Panel Header



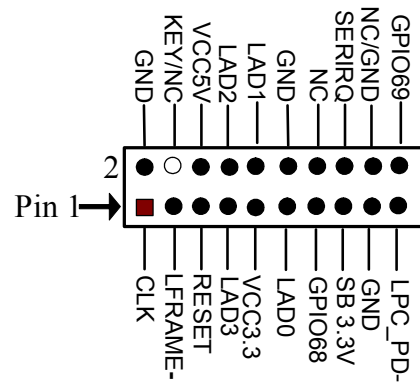
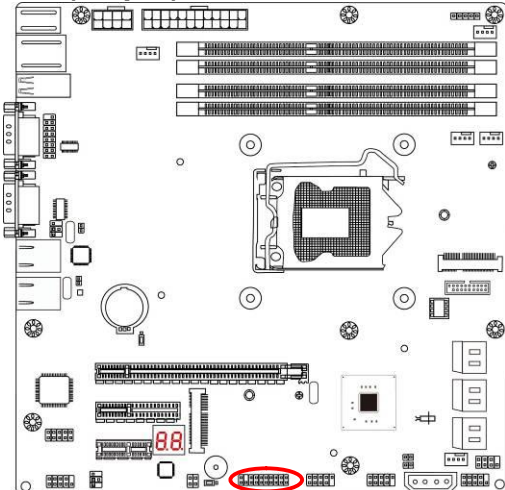
(2) SPK-LED (7-pin): PWR LED Header & Speaker Header



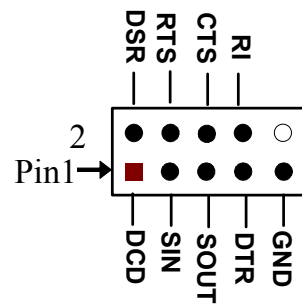
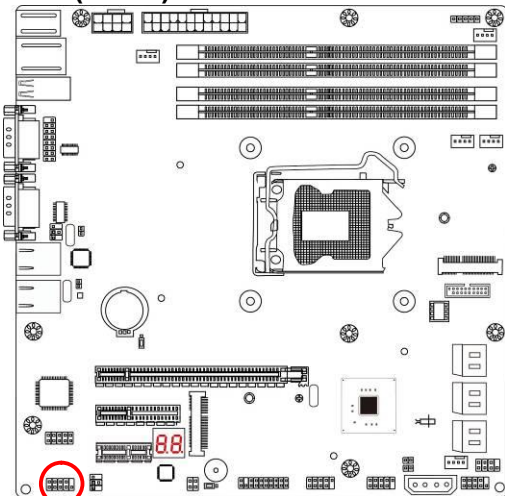
(3) F_USB1/ F_USB2 (9-pin): USB 2.0 Port Header



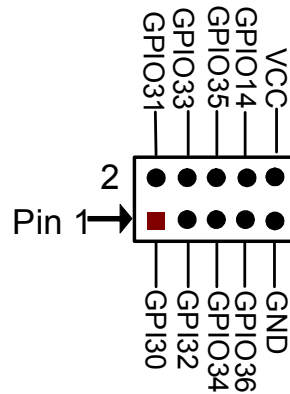
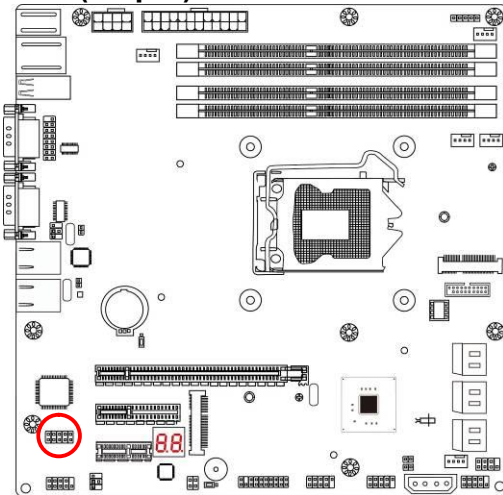
(4) TPM1 (19-pin): TPM 1.2 Header



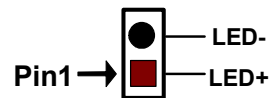
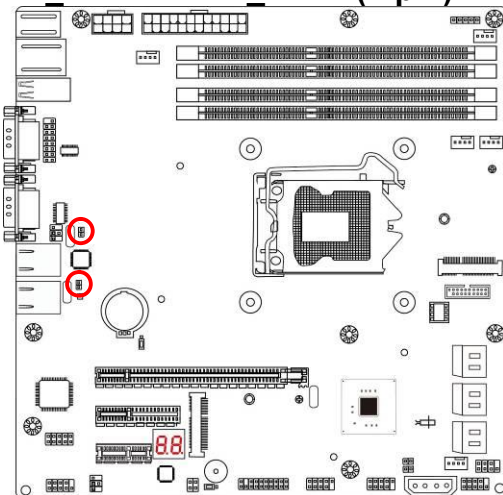
(5) COM2 (9-Pin): Serial Port Header



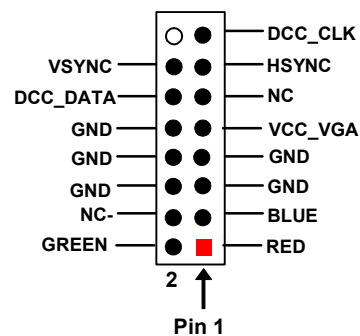
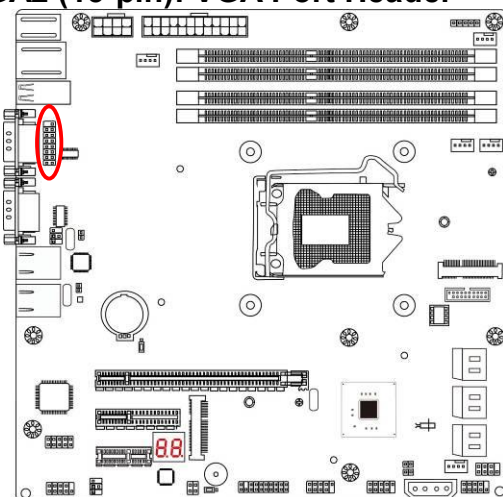
(6) GPIO1 (10-pin): GPIO Header



(7) LAN1_LED1/ LAN2_LED2 (2-pin): LANLED Status Indicator Header

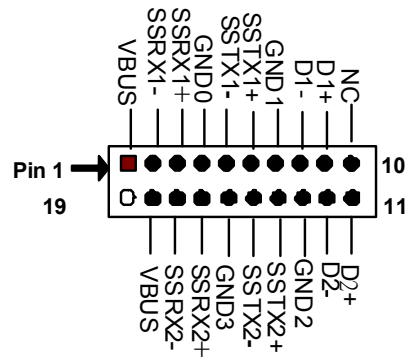
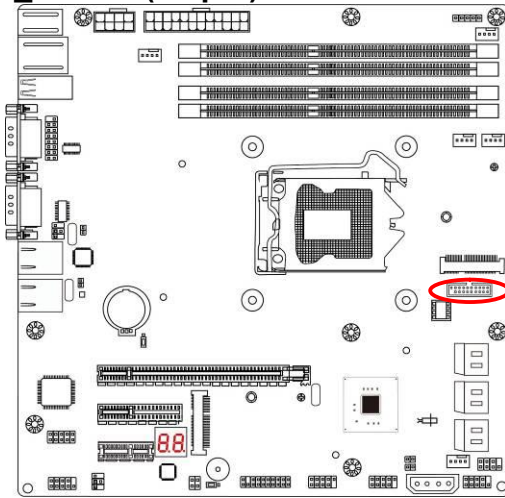


(8) VGA2 (15-pin): VGA Port Header

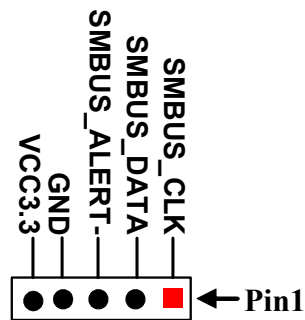
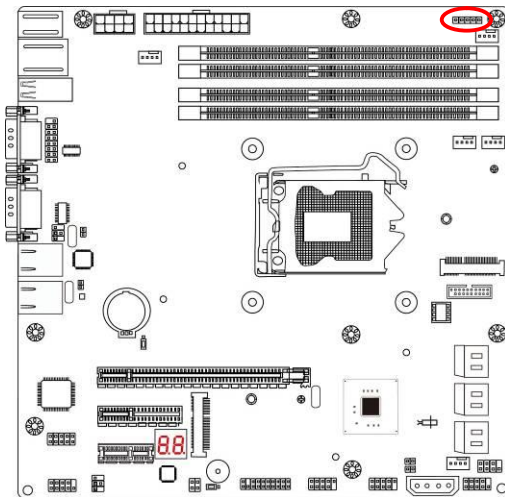


**Note: VGA2 header shares with VGA1 port, i.e., only one of them can work at a time at user's choice.*

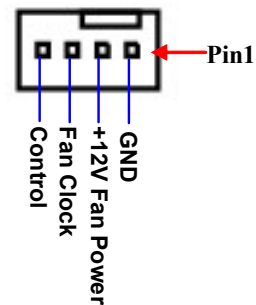
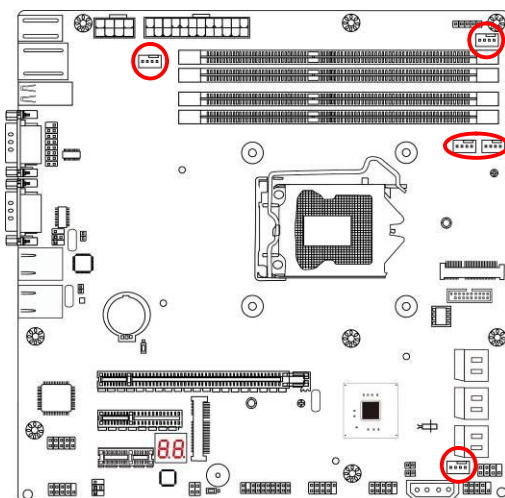
(9) FP_USB30 (19-pin): USB 3.0 Port Header



(10) SMBUS1 (4-pin): SM BUS Header



(11) CPUFAN1/SYSFAN1/SYSFAN2/SYSFAN3/SYSFAN4 (4-pin): FAN Headers



Chapter 3

Introducing BIOS

Notice! The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version form our official website.

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

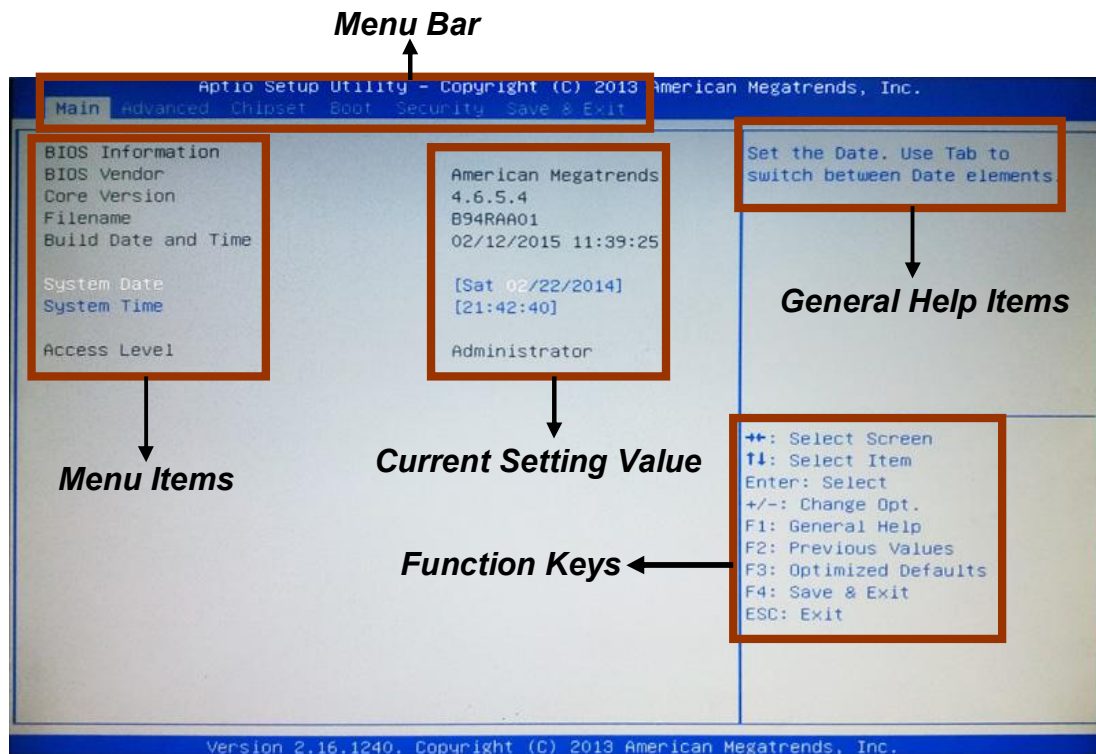
3-1 Entering Setup

Power on the computer and by pressing immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press to enter Setup; press < F7> for Popup Menu.

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



3-3 Function Keys

In the above BIOS Setup main menu of, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press ←→ (left, right) to select screen;
- Press ↑↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.
- Press <+>/<-> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous value.
- [F3]: Optimized defaults.
- [F4]: Save & Exit.
- Press <Esc> to quit the BIOS Setup.

3-4 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

Status Page Setup Menu/Option Page Setup Menu

Press [F1] to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

3-5 Menu Bars

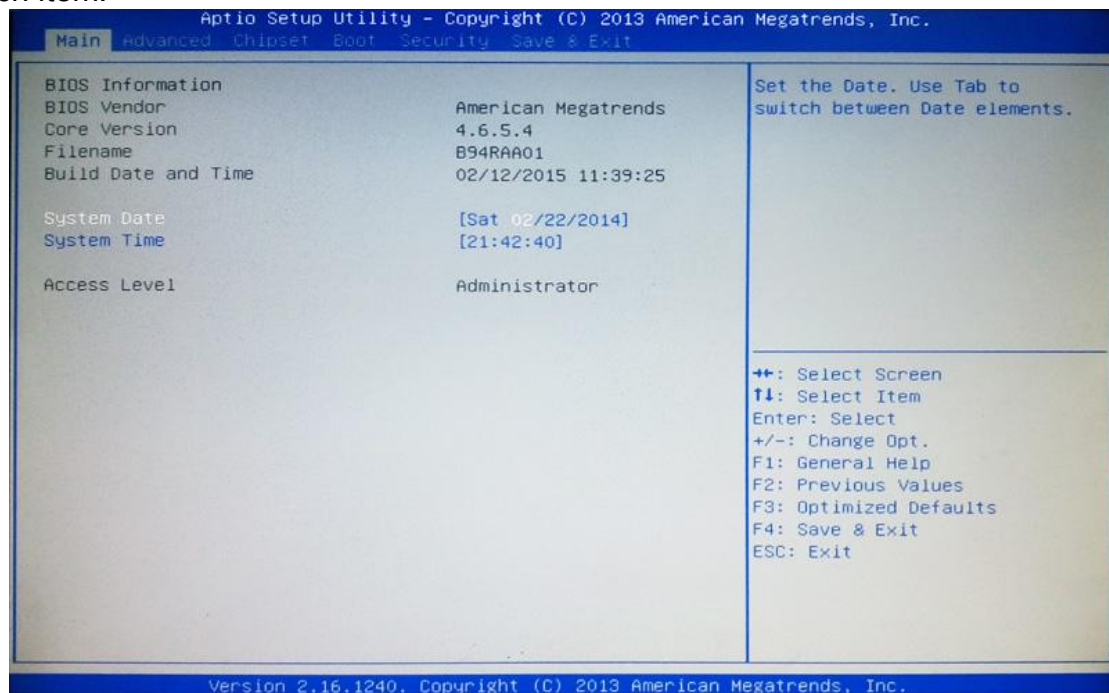
There are six menu bars on top of BIOS screen:

Main	To change system basic configuration
Advanced	To change system advanced configuration
Chipset	To change chipset configuration
Boot	To change boot settings
Security	Password settings
Save & Exit	Save setting, loading and exit options.

User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

3-6 Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.



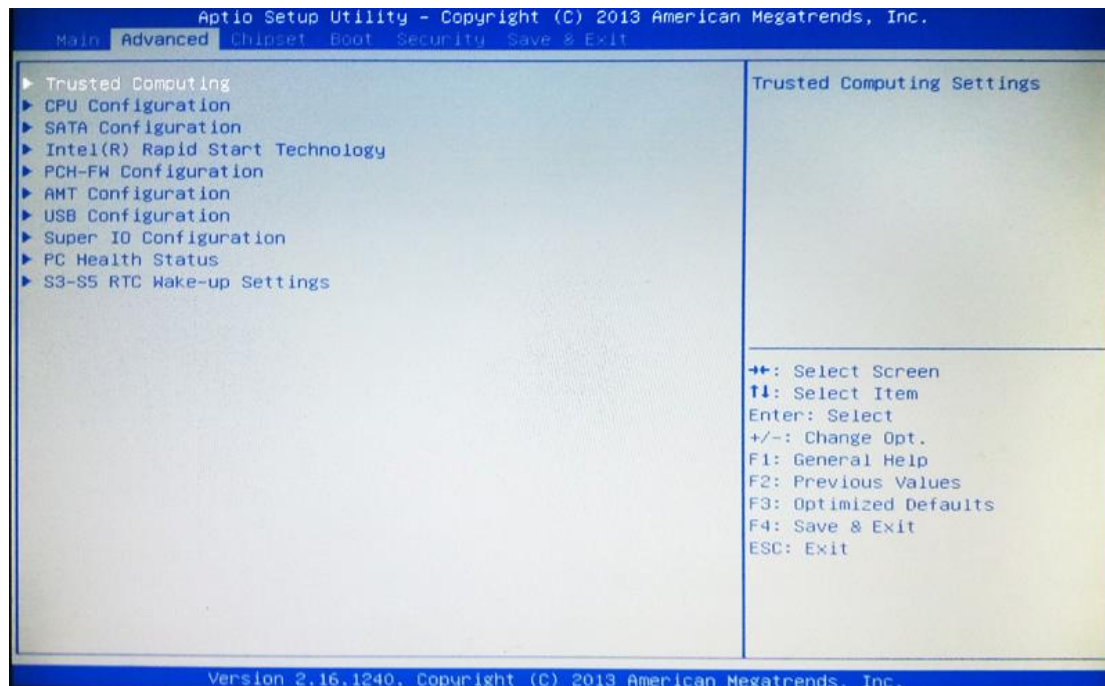
System Date

Set the date. Please use [Tab] to switch between data elements.

System Time

Set the time. Please use [Tab] to switch between time elements.

3-7 Advanced Menu



▶ **Trusted Computing**

Press [Enter] to enable or disable Security Device Support.

Configuration

Security Device Support

Use this item to enable or disable BIOS support for security device. TCG EFI protocol and INT1A interface will not be available.

The optional settings: [Disabled]; [Enabled].

▶ **CPU Configuration**

Press [Enter] to view current CPU configuration and make settings for the following sub-items:

Hyper-Threading

The optional settings: [Disabled]; [Enabled].

[Enabled]: for Windows XP and Linux (OS optimized for Hyper-Threading Technology).

[Disabled]: for other OS (OS optimized not for Hyper-Threading Technology).

**This item might not be available depending different CPU configuration.*

Limit CPUID Maximum

The optional settings: [Disabled]; [Enabled].

This item should be set as [Disabled] for Windows XP.

Execute Disable Bit

The optional settings: [Disabled]; [Enabled].

Intel Virtualization Technology

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Hardware Prefetcher

The optional settings are: [Disabled]; [Enabled].

Use this item to turn on/off the Mid Level Cache (L2) streamer prefetcher.

Adjacent Cache Line Prefetch

The optional settings are: [Disabled]; [Enabled].

Use this item to turn on/off prefetching of adjacent cache lines.

EIST

The optional settings: [Disabled]; [Enabled].

Use this item to enable or disable Intel SpeedStep.

CPU C Status

Use this item to enable or disable CPU C status.

The optional settings: [Disabled]; [Enabled].

▶ **SATA Configuration**

Press [Enter] to make settings for the following sub-items:

SATA Controller(s)

The optional settings: [Disabled]; [Enabled].

**When set as [Disable], user can make further settings in 'SATA Mode Selection'.*

SATA Mode Selection

The optional settings are: [IDE]; [AHCI]; [RAID].

**When set as [AHCI] or [RAID], user can make further settings in 'SATA Controller Speed'.*

SATA Controller Speed

The item is for user to set the maximum speed the SATA controller can support.

The optional settings are: [Default]; [Gen1]; [Gen2]; [Gen3].

**When set as [AHCI] or [RAID], user can also make further settings for each available SATA (1~6) port or MSATA port:*

Serial ATA Port 1/2/3/4/5/6/ m-SATA

Port 1/ Port 2/ Port 3/ Port 4/ Port 5/m-SATA

The optional settings: [Disabled]; [Enabled].

Use this item to enable or disable each SATA port.

▶ **Intel(R) Rapid Start Technology**

Press [Enter] to go to next screen to enable or disable 'Intel(R) Rapid Start Technology'.

**When set as [Enabled], user can also make further settings in the following items that appear:*

Entry on S3 RTC Wake

Use this item to enable or disable RapidStart innovation upon S3 RTC wake.

Entry After

Use this item to enable RTC wake timer at S3 entry. Value ranges from 0 (immediately) to 120 minutes.

Active Page Threshold Support

Use this item to enable or disable support for RST with small partition.

▶ **PCH-FW Configuration**

Press [Enter] to view ME information and make settings for 'Firmware Update Configuration'.

▶ **Firmware Update Configuration**

Use this item to configure Management Engine technology parameters. Press [Enter] to make settings for ME FW Image RE-Flash.

ME FW Image RE-Flash

Use this item to enable or disable ME FW Image Re-Flash function.
The optional settings: [Disabled]; [Enabled].

** In the case that user needs to update ME firmware, user should set 'ME FW Image Re-Flash' as [Enabled], save the settings and exit. The system will turn off and reboot after 4 seconds. If the user goes to BIOS screen again will find this item is set again as [Disabled], but user can still re-flash to update firmware next time.*

▶ **AMT Configuration**

Use this item to configure Active Management Technology parameters.
Press [Enter] to make settings for the following sub-items:

Intel AMT

Use this item to enable or disable Intel Active Management Technology BIOS extension.

BIOS Hotkey Pressed

Use this function to enable or disable BIOS Hotkey Press function.

MEBx Selection Screen

Use this function to enable or disable MEBx Selection Screen function.

Hide Un-Configure ME Confirmation

Use this function to enable or disable Hide Un-Configure ME without password Configuration Prompt function.

MEBx Debug Message Output

Use this function to enable or disable MEBx Debug Message Output function.

Un-Configure ME

Use this function to enable or disable Un-Configure ME without password function.

Amt Wait Timer

Use this item to set time to wait before sending ASF_GET_BOOT_OPTIONS.

Disable ME

Use this item to set ME to soft Temporary Disabled function.

ASF

Use this item to enable or disable Alert Specification Format.

Activate Remote Assistance Process

Use this item to enable or disable Trigger CIRA boot function.

USB Configure

Use this item to enable or disable USB configure function.

PET Progress

Use this item to enable or disable PET events progress to receive PET event or not.

WatchDog

Use this item to enable or disable WatchDog Timer. When set as [Enabled], the following sub-items shall appear:

OS Timer

Use this item to set OS watch dog timer.

BIOS Timer

Use this item to set BIOS watch dog timer.

▶ **USB Configuration**

Press [Enter] to make settings for the following sub-items:

Legacy USB Support

The optional settings are: [Enabled]; [Disabled]; [Auto].

[Enabled]: To enable legacy USB support.

[Disabled]: to keep USB devices available only for EFI specification,

[Auto]: To disable legacy support if no USB devices are connected.

XHCI Legacy Support

The optional settings are: [Disabled]; [Enabled].

XHCI Hand-off

This is a workaround for Oses without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

The optional settings are: [Enabled]; [Disabled].

EHCI Hand-off

This is a workaround for Oses without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

The optional settings are: [Disabled]; [Enabled].

USB Mass Storage Driver Support

The optional settings are: [Disabled]; [Enabled].

USB Transfer time-out

Use this item to set the time-out value for control, bulk, and interrupt transfers.

The optional settings are: [1 sec]; [5 sec]; [10 sec]; [20 sec].

Device reset time-out

Use this item to set USB mass storage device start unit command time-out.

The optional settings are: [10 sec]; [20 sec]; [30 sec]; [40 sec].

Device power-up delay

Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.

The optional settings: [Auto]; [Manual].

Select [Manual] you can set value for the following sub-item: '**Device Power-up delay in seconds**'.

Device Power-up delay in seconds

The delay range is from 1 to 40 seconds, in one second increments.

▶ **Super I/O Configuration**

Press [Enter] to make settings for the following sub-items:

Super IO Configuration

▶ **Serial Port 1 Configuration**

Press [Enter] to make settings for the following items:

Serial Port

Use this item to enable or disable serial port (COM).

Change Settings

Use this item to select an optimal setting for super IO device.

Transmission Mode Select

The optional settings are: [RS422]; [RS232]; [RS485].

Mode Speed Select

The optional settings are: [RS232/RS422/RS485=250kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

▶ **Serial Port 2 Configuration**

Press [Enter] to make settings for the following sub-items:

Serial Port

Use this item to enable or disable serial port (COM).

Change Settings

Use this item to select an optimal setting for super IO device.

ERP Support

The optional settings: [Auto]; [Disabled].

This item should be set as [**Disabled**] if you wish to have all active wake-up functions.

Case Open Warning

This item controls detect case open warning function.

The optional settings are: [Disabled]; [Enabled].

KB/MS Wake-Up from S3 (PS2/USB)

The optional settings are: [Disabled]; [Enabled].

KB/MS wake-up is affected by ERP function in S4-S5. Please disable ERP before activating this function in S4-S5.

WatchDog Timer

The optional settings are: [Disabled]; [Enabled].

**When set as [Enabled], the following sub-items shall appear:*

WatchDog Timer Value

User can set a value in the range of [10] ~ [255] seconds, or [1]~[255] minutes.

WatchDog Timer Unit

The optional settings are: [Sec.]; [Min.].

WatchDog Timer Value in ERP

This item only shows up when 'ERP Support' is set as [Enabled].

The optional settings are: [Disabled]; [Enabled].

**When set as [Enabled], the following sub-items shall appear:*

WatchDog Timer Value in ERP

User can set a value in the range of [10] ~ [4095] seconds, or [1]~[4095] minutes.

WatchDog Timer Unit

The optional settings are: [Sec.]; [Min.].

▶ PC Health Status

Press [Enter] to view hardware health status, set shutdown temperature for system, or make further settings in 'SmartFAN Configuration'.

▶ SmartFan Configuration

Press [Enter] to make settings for SmartFan Configuration:

SmartFAN Configuration

CPUFAN / SYSFAN/ SYSFAN2 / SYSFAN3 / SYSFAN4 Smart Mode

The optional settings are: [Disabled]; [Enabled].

When set as [Enabled], the following sub-items shall appear:

CPUFAN / SYSFAN/ SYSFAN2 / SYSFAN3 / SYSFAN4 Full-Speed Temperature

Use this item to set CPUFAN/SYSFAN1/ SYSFAN 2/ SYSFAN 3/ SYSFAN 4 full speed temperature. Fan will run at full speed when above this temperature.

CPUFAN / SYSFAN/ SYSFAN2 / SYSFAN3 / SYSFAN4 Full-Speed Duty

Use this item to set CPUFAN/ SYSFAN1/ SYSFAN 2/ SYSFAN 3/ SYSFAN 4 full speed duty. Fan will run at full speed when above the pre-set duty.

CPUFAN / SYSFAN/ SYSFAN2 / SYSFAN3 / SYSFAN4 Idle-Speed

Temperature

Use this item to set CPUFAN/SYSFAN1/ SYSFAN 2/ SYSFAN 3/ SYSFAN 4 idle speed temperature. Fan will run at idle speed when below this temperature.

CPUFAN / SYSFAN/ SYSFAN2 / SYSFAN3 / SYSFAN4 Idle-Speed Duty

Use this item to set CPUFAN/SYSFAN1/ SYSFAN 2/ SYSFAN 3/ SYSFAN 4 idle speed duty. Fan will run at idle speed when below the pre-set duty.

Shutdown Temperature

Use this item to select system shutdown temperature.

The optional settings are: [Disabled]; [70°C/156°F]; [75°C/164°F]; [80°C/172°F]; [85°C/180°F]; [90°C/188°F].

▶ **S3-S5 RTC Wake-up Settings**

Use this item to enable the system wake on RTC alarm from S3-S5. RTC alarm is affected by ERP function in S4-S5. Please disable 'ERP Support' before activating RTC alarm in S4-S5.

Press [Enter] to make settings for the following sub-items:

Wake-up System with Fixed Time

Use this item to enable or disable system wake-up on alarm event.

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], system will wake on the hour/min/sec specified.

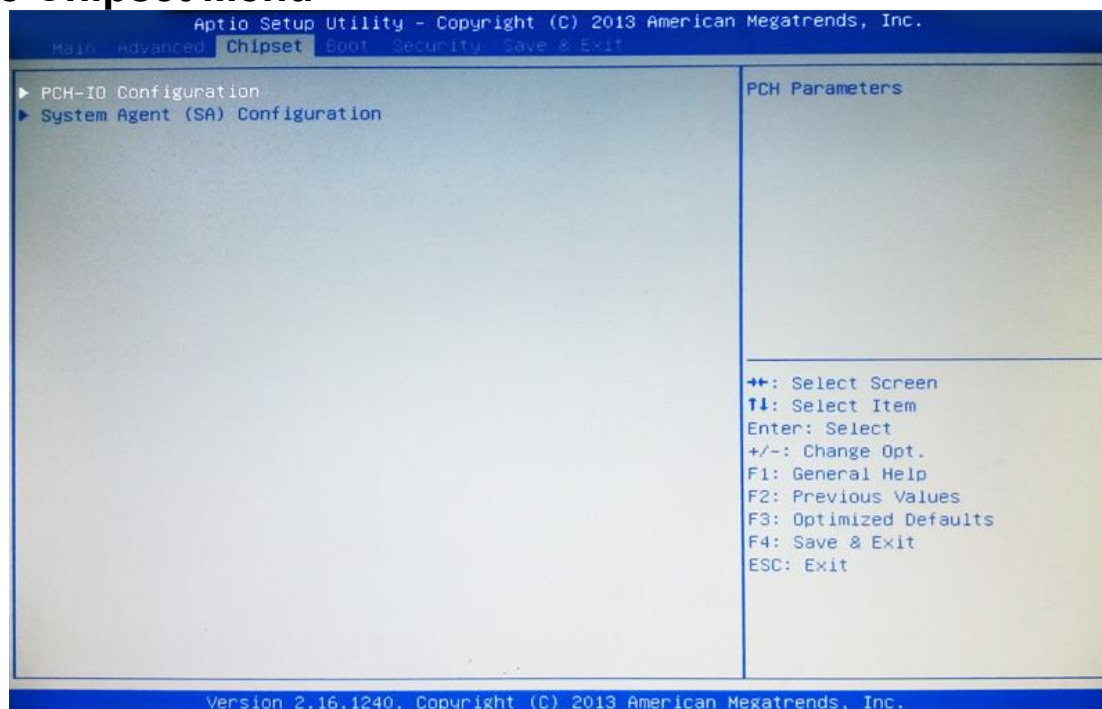
Wake-up System with Dynamic Time

Use this item to enable or disable system wake-up on alarm event.

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], system will wake on the current time + increased minute(s).

3-8 Chipset Menu



▶ **PCH-IO Configuration**

Press [Enter] to make settings for the following sub-items:

Intel I217LM LAN

Use this item to enable or disable onboard Intel I217LM LAN controller.

Wake on I217LM LAN

The optional settings are: [Enabled]; [Disabled].

This item is affected by ERP function. Please disable '**ERP Support**' before activating this function.

Intel I211AT LAN

Use this item to enable or disable onboard Intel I211AT LAN controller.

The optional settings are: [Enabled]; [Disabled].

PCI Express Slot (x4)

The default setting is: [Enabled].

**Note: 'PCI Express Slot (x4)' can only be set as [Enabled].*

PCIe Speed

The optional settings are: [Auto]; [Gen1]; [Gen2].

PCI Express Slot (x1)

The optional settings are: [Disabled]; [Enabled].

PCIe Speed

The optional settings are: [Auto]; [Gen1]; [Gen2].

Mini PCIE

The optional settings are: [Disabled]; [Enabled].

PCIe Speed

The optional settings are: [Auto]; [Gen1]; [Gen2].

▶ **USB Devices Configuration**

Press [Enter] to further setting USB device configuration.

USB Configuration

XHCI Mode

Use this item to select mode of operation for XHCI controller.

The optional settings are: [Smart Auto]; [Disabled].

**When set as [Disabled], the following sub-items shall appear:*

EHCI1/EHCI2

Use this item to control the USB EHCI (USB 2.0) functions.

One EHCI controller must always be enabled.

System State after Power Failure

Use this item to select AC power state when power is re-applied after a power failure.

The optional settings are: [Always Off]; [Always On]; [Former State].

▶ **System Agent (SA) Configuration**

Press [Enter] to make settings for the following sub-items:

VT-D

The optional settings are: [Enabled]; [Disabled].

**This item might not be available depending different CPU configuration.*

Azalia Internal HDMI Codec

Use this item to enable or disable HDMI port audio device.

The optional settings are: [Enabled]; [Disabled].

▶ **Graphics Configuration**

Press [Enter] to make further settings for Graphics Configuration.

Graphics Configuration

Primary Display

Use this item to select which of IGFX/PEG/PCI graphics device should be primary display or select SG for switchable GFX.

The optional settings are: [Auto]; [IGFX]; [PEG]; [PCIE].

Internal Graphics

The optional settings are: [Auto]; [Disabled]; [Enabled].

Aperture Size

The optional settings are: [128MB]; [256MB]; [512MB].

DVMT Pre-Allocated

Use this item to select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

The optional settings are: [32M]; [64M]; [96M]; [128M]; [160M]; [192M]; [224M]; [256M]; [288M]; [320M]; [352M]; [384M]; [416M]; [448M]; [480M]; [512M]; [1024M].

DVMT Total Gfx Mem

Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device.

The optional settings are: [128M]; [256M]; [MAX].

Primary IGFX Boot Display

Use this item to select the video device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

The optional settings are: [VBIOS Default]; [CRT1/CRT2]; [HDMI].

**When set as [CRT1/CRT2] or [HDMI], the following sub-item shall appear:*

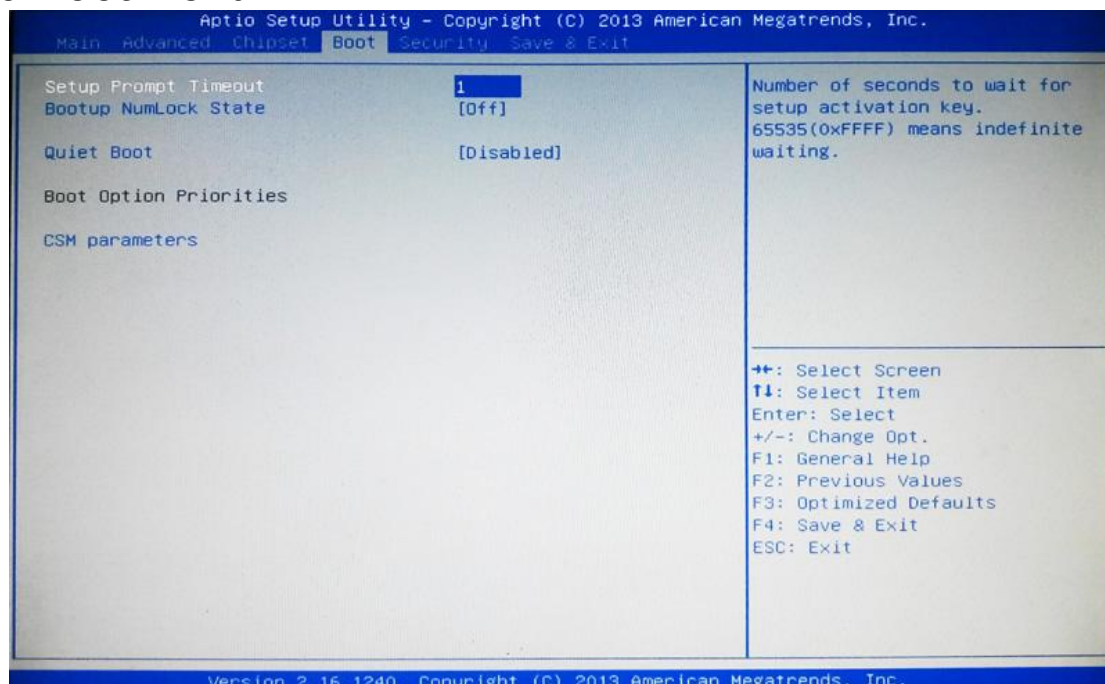
Secondary IGFX Boot Display

The optional settings are: [Disabled]; [CRT1/CRT2]; [HDMI].

▶ Memory Configuration

Press [Enter] to view current memory information.

3-9 Boot Menu



Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key.

Bootup Numlock State

Use this item to select keyboard numlock state.

The optional settings are: [On]; [Off].

Quiet Boot

The optional settings are: [Disabled]; [Enabled].

Boot Option Priorities

▶ CSM parameters

Press [Enter] to make settings for the following sub-items:

Boot option filter

This option controls what device system can boot to.

The optional settings are: [UEFI and Legacy]; [Legacy only]; [UEFI only].

Launch PXE OpROM policy

This option controls the execution of UEFI and Legacy PXE OpROM.

The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

Launch Storage OpROM policy

This option controls the execution of UEFI and Legacy Storage OpROM.

The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

Launch Video OpROM policy

This option controls the execution of UEFI and Legacy Video OpROM.

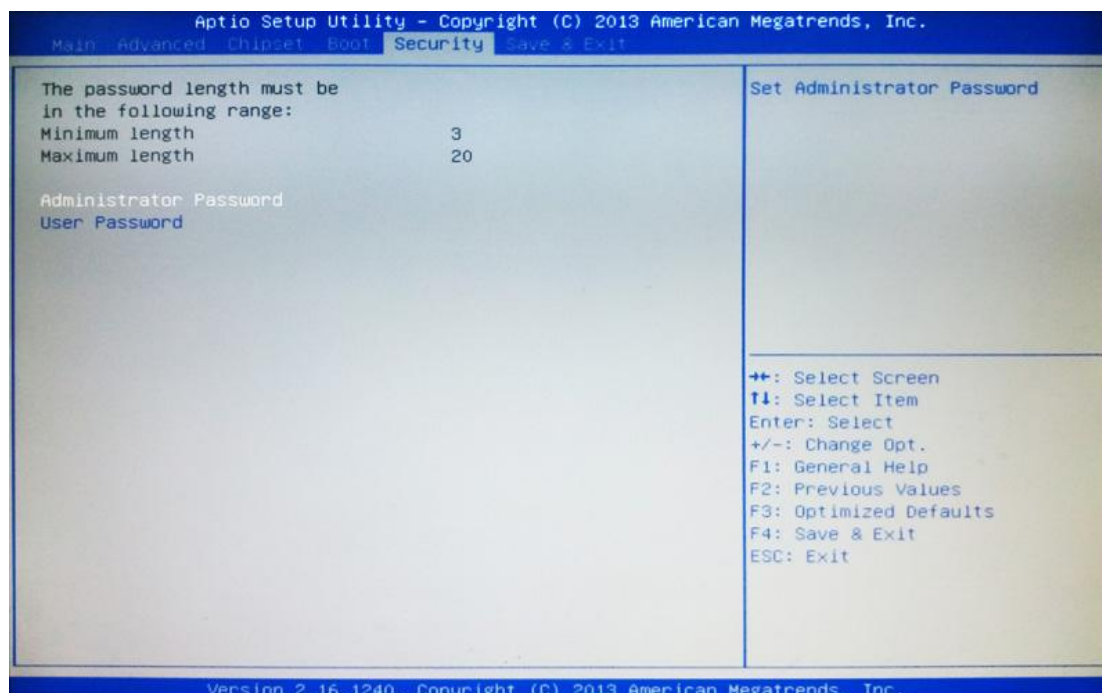
The optional settings are: [Do not launch]; [UEFI only]; [Legacy only] ; [Legacy first]; [UEFI first].

Other PCI device ROM priority

This item is for PCI devices other than Network, Mass storage or video defines which OpROM to launch.

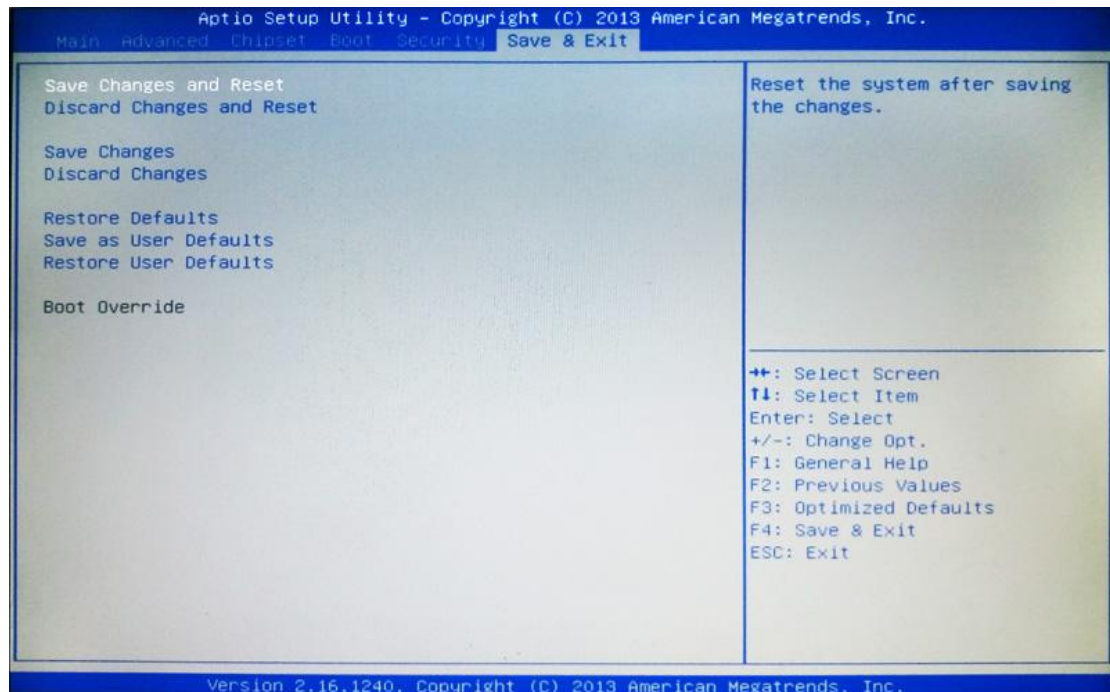
The optional settings are: [UEFI OpROM]; [Legacy OpROM].

3-10 Security Menu



Security menu allow users to change administrator password and user password settings.

3-11 Save & Exit Menu



Save Changes and Reset

This item allows user to reset the system after saving the changes.

Discard Changes and Reset

This item allows user to reset the system without saving any changes.

Save Changes

This item allows user to save changes done so far to any of the setup options.

Discard Changes

This item allows user to discard changes done so far to any of the setup options.

Restore Defaults

Use this item to restore /load default values for all the setup options.

Save as User Defaults

Use this item to save the changes done so far as user defaults.

Restore User Defaults

Use this item to restore defaults to all the setup options.